

Exaflop era : Eviden hardware and software solutions

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The BullSequana XH3000 system is the next generation of the BullSequana Direct Liquid Cooled (DLC) X-Series (“X” referring to Exascale, “H” to Hybrid). Designed, developed, and manufactured in Europe by Eviden, BullSequana XH3000 is an evolution of the earlier BullSequana X1000 and XH2000 systems deployed at major labs across the world. It is designed as a fully direct warm water-cooled rack that can house, power and cool various node and processor types. Designed by Eviden’s R&D and in close cooperation with major customers, the BullSequana XH3000 supercomputer leverages the latest technological advances to guarantee maximum performance for a minimized operating cost. BullSequana is by design a solution for Exascale challenges:

1. BullSequana XH3000 proposes a large choice of processors and accelerators from Intel, AMD and NVIDIA, and different interconnect technologies (BXI -the Bull eXascale Interconnect, InfiniBand NDR, High-Speed Ethernet) offering maximum investment protection. It is designed to integrate the most advanced technologies, ready to support the future technologies that will make it possible to reach the exaflops level.
2. Furthermore, controlling energy consumption is one of the main roadblocks at Exascale and beyond. BullSequana XH3000 is ultra-energy-efficient: it targets a PUE very close to 1. The components of BullSequana XH3000 – all compute nodes, switches and even the PSUs – are cooled with warm water, using an enhanced version of the Bull Direct Liquid Cooling (DLC) technology.
3. The BullSequana XH3000 lies at the heart of Eviden’ Exascale development program for HPC. The BullSequana XH3000 system is highly modular, flexible and scalable and has been built from scratch as a fully integrated supercomputer. It is designed to support many types and generations of compute nodes either with conventional processors or with accelerators.

Beyond the description of this very performant architecture, in this talk we will focus on some important collaborations and projects dedicated to the applications. Eviden, thanks to its experts from Center of Excellence for Performance Programming, R&D and Applications&Performance Teams, works closely with the developers of applications to port, optimize and develop algorithms well-suited for the next generation of supercomputers.